The EXCAVATING ENGINEER

Vol. XXII DECEMBER 1928 No. 12

IN THIS ISSUE:

New Electric Shovels Double Production at Allendale Mine.

Diesel Dragline Excavates Irrigation Ditch in Tropics.

Modern Methods Jump Production 70% and Reduce Men on Pay Roll More Than One Half.

Front Cover Illustration:
Central Indiana Coal Company Allendale Mine Strip Pit Operations Near Linton, Indiana.

the Gas + Air BUCYRUS-ERIE *"has done remarkable work"* for Thomas Rising, *"with no mechanical delays whatever"*

First he worked a Gas + Air in the Great Lakes country — ripping out rock at the stinging temperature of 30° below zero.

This was at Caneadea Dam, for the Flower City Excavating Co. of Rochester, N. Y., who wrote: "Our Gas + Air BUCYRUS-ERIE has just taken out 25,000 yards of rock and 10,000 yards of earth, supplying air for rock drilling — has done remarkable work on this tough job."

And now Tom Rising is on another Gas + Air — this time in Colombia, where the tropic sun beats a steady tattoo of blistering heat on men and machines. And he writes:

> "The Gas + Air BUCYRUS-ERIE works fine here in the equatorial heat, which often gets up to 135°. No mechanical delays whatever in 4 months — our only parts have been 6 sets of dipper teeth and a fan belt."

You can place real confidence in the shovel that shows such Reliability under these extremes of weather conditions — while doing the hardest digging a shovel can be put to.

And this reliable digger gives a much larger output — having direct-connected air engines for crowding and swinging, it is far ahead of other gas shovels for Big Production.

Easily convertible to a highly efficient clamshell or dragline excavator.

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WIS. ERIE, PA. EVANSVILLE, IND.

General Sales Offices:
SOUTH MILWAUKEE, WIS. and ERIE, PA.

Representatives throughout the U. S. A.

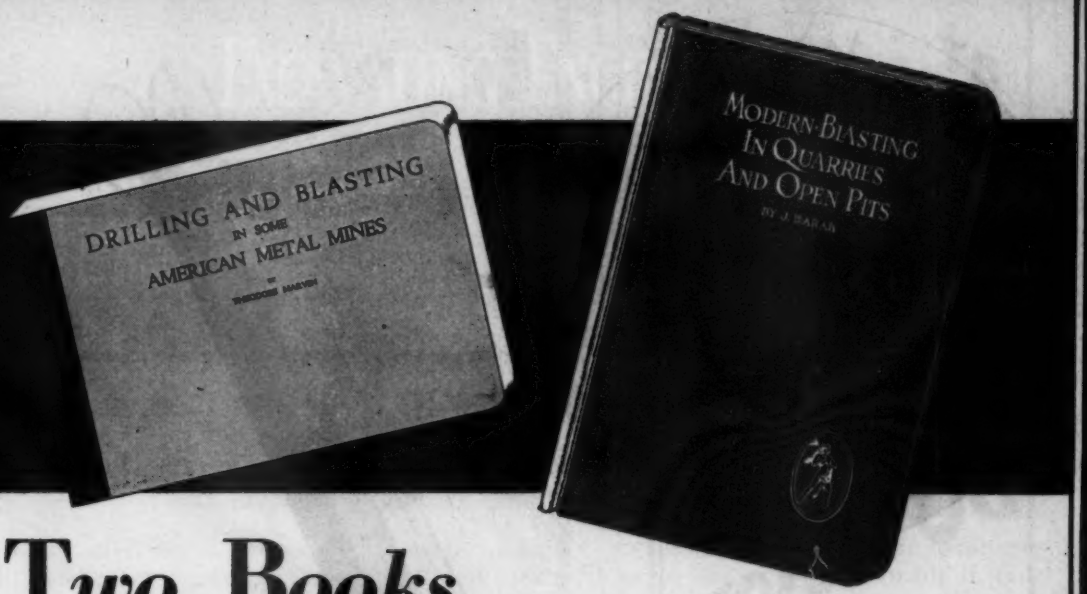
Offices and agencies in all principal countries.

BUCYRUS ERIE

Branch Offices:

BOSTON
NEW YORK
PHILADELPHIA
ATLANTA
BIRMINGHAM
PITTSBURGH
BUFFALO
DETROIT
CHICAGO
ST. LOUIS
DALLAS
SAN FRANCISCO

In writing to Bucyrus-Erie Company please use post card bound in the center of this number.



Two Books

FOR USERS OF EXPLOSIVES

EVERYONE who is interested in moving materials with explosives can find helpful information in two books that we have recently issued.

"Modern Blasting in Quarries and Open Pits" is a volume of 170 pages illustrated with many photographs and diagrams. It is based entirely upon observation of successful blasting practice at many of the country's most important operations. Its 21 chapters cover such subjects as: Drills and Drilling; Blasting by the Tunnel Method; Blasting for Trap Rock, Ballast and Gravel; Shale, Sand and Silica Quarries, and Gravel Pits; Quarrying for Cement Rock and Flux Stone; How to Increase Production and Lower Production Costs; Cost Reduction Through Accident Prevention.

"Drilling and Blasting in Some American Metal Mines", 197 pages, is a study of methods in 90 leading mines. It presents in condensed form the results of the work of hundreds of the country's foremost mining engineers. It is arranged and tabulated so that you can find out quickly how others are solving problems that trouble you. The first section of the book gives information about each mine that will enable you to determine which of the operations discussed encounters conditions similar to your own. In the last section are drilling and blasting diagrams showing the position of the holes, order of detonation and size of charges. The third section is composed of indexes that make it possible to locate the information you want quickly and easily.

Either of these books will be forwarded to men in positions involving the use of explosives. Please use the coupon below.

For information on other explosives and blasting supplies, see pages 170 to 172 of the 1928 Keystone Metal Quarry Catalogue.

HERCULES POWDER COMPANY

Sales Offices: Allentown, Pa., Birmingham, Buffalo, Chattanooga, Chicago, Denver, Duluth, Hazleton, Pa., Huntington, W. Va., Joplin, Mo., Los Angeles, Louisville, New York City, Norristown, Pa., Pittsburg, Kan., Pittsburgh, Pottsville, Pa., St. Louis, Salt Lake City, San Francisco, Wilkes-Barre, Wilmington, Del.

Hercules Powder Company, Inc., 949 King Street, Wilmington, Delaware

Gentlemen:

I am interested in the effective use of explosives for:

( ) Underground Mining ( ) Tunneling ( ) Quarrying ( ) Open Pit Mining

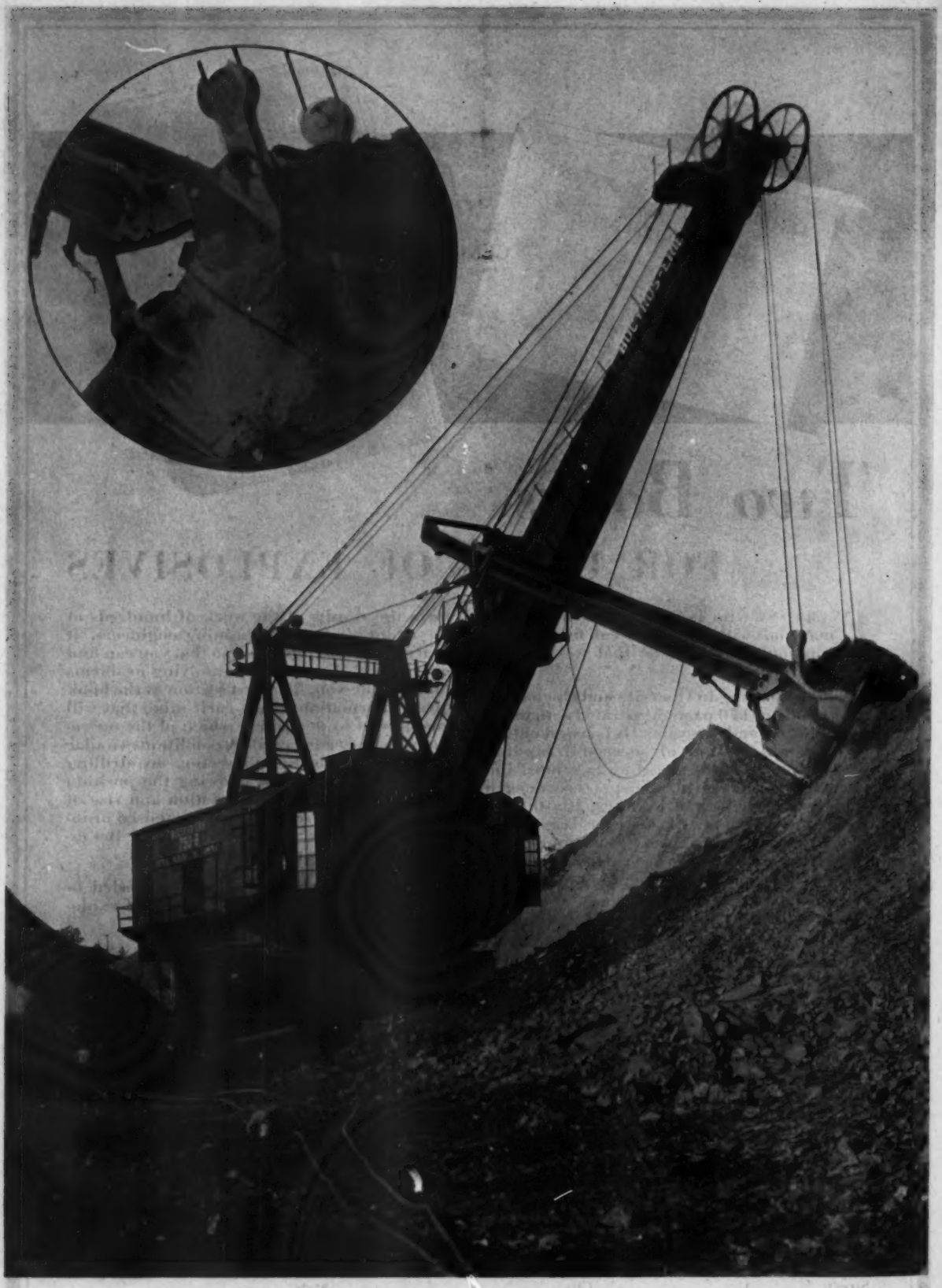
Please send me without charge your latest book on the subject.

Name ..... **Position** .....

Company .....

Street ..... **City** ..... **State** .....

2233



A giant of shovels is this Bucyrus-Erie 750-B electric stripper now doubling production at the Central Indiana Coal Company Allendale Mine.

The EXCAVATING ENGINEER

Vol. XXII DECEMBER 1928 No. 12

New Electric Shovels Double Production at Allendale Mine

Central Indiana Coal Company Use 12-Yard Stripper to Increase Output and Install Other New Equipment to Improve Quality of "Amber Jacket".

BACK in 1917, R. H. Sherwood, who since 1913 had pioneered in the Danville, Illinois, strip coal area, organized the Central Indiana Coal Company and opened the Robin Hood Mine near Linton, Indiana. This mine started loading coal in 1918 and is still producing. Today it is the oldest strip pit in the State. In those early years the production of the Central Indiana Coal Company ran about 150,000 tons of coal a year. Last year this company produced between 350,000 and 400,000 tons of coal and recently installed new equipment which will increase the plant capacity of their two mines, the Robin Hood (No. 1) and Allendale (No. 2), to between 600,000 and 700,000 tons per year. This rapid growth is a tribute to the efficiency and progressiveness of the management, and also indicates the maintenance of high-quality product.

It is with the Allendale that this article deals, as it is here that most recent developments in plant have been made. There is at present available at the Allendale in the area now being opened up, about four million tons of the finest grade of Indiana coal. This tonnage represents the available coal under less than 45 feet of overburden.

The mine was taken over a number of years ago from another operator who had gone bankrupt in its attempted operation, and was re-equipped with Bucyrus steam shovels, a second-hand 225-B and a 35-B. The daily production with this plant was 800 tons per day.

Use New Bucyrus-Erie 12-Yard Stripper to Double Production at Allendale

Today the production capacity is 2,000 tons per day, made possible by discarding the old shovel equipment and the installation of a Bucyrus-Erie 750-B, 12-yard stripper and 75-B, 3¼-yard, coal loader. Other necessary changes in hauling equipment, washer, and tipple were made in order to handle the increased tonnage and at the same time to bring the excellent quality of Amber Jacket coal to an even higher standard.

Both machines are, of course, electrically operated with Ward-Leonard control. A coal mine may perhaps seem rather an illogical place for electric shovel equipment but a pad and pencil readily show the economy of the electric equipment when power costs are balanced against the selling value of coal required for steam equipment, plus delivery on board shovel, and firing costs. Many obvious advantages favor electrical equipment on the shovels. Over a period of years the electric shows steadier operation with no standby losses, greater freedom from repairs, no vibration, no water troubles and no overtime for boiler clean-out.

The 3¼-yard loader cuts heaping dippers out of the coal seam without blasting. Notice the Sanford-Days with the automatic dumping levers beside the rear trucks.

Power for the shovels as well as for the washer and tipple is purchased from the Interstate Public Service Corporation and transmitted from the coal-operated power plant at Edwardsport about 30 miles away. Power is brought in over a 33,000-volt transmission line and stepped down by transformers to 4000 volts for shovel operation and to 440 volts for other equipment.

the straightaway the machine can average around a pass a minute throughout the entire shift. And every pass carries a heaping dipperful, trust General Superintendent Stewart to see to that.

Caterpillar mounting under the big stripper simplifies and facilitates moving. Less than a minute is required for a complete move. Two whistles from the siren sends the single pitman

Left: The 12-yard dipper of the 750-B takes a bite. Center: Coal loader filling up the Sanford Days. Right: Moving up takes less than a minute with the giant Bucyrus-Erie.

Big Stripper Has Lines and Pace of a Thoroughbred

Naturally, to men in the field of excavation, the feature of greatest interest at the Allendale is the new Bucyrus-Erie stripper. It is difficult to describe in words or pictures even the size of this mammoth machine. The mechanical details and many new features of construction of this 12-yard unit have been quite fully covered in an article in the November issue of *The Excavating Engineer*, but the machine must be seen in action to be really appreciated.

The great two-part cast steel dipper swings down into the pit and stops smoothly and accurately at the toe of the bank. Then up it comes almost without pause, crashing unhesitatingly through the slate bottom, cutting through the earth above as though it were soft cheese, and breaking out of the top of the bank carrying a mighty heap over the dipper top. Swiftly and surely it carries its load to the spoil pile, dumps and returns with an unfailing sureness and regularity. Despite its 1,788,000 pounds, the machine is unbelievably graceful in action and has the clean-cut lines and well-balanced strength of a thoroughbred.

Superintendent W. H. Stewart and Foreman Walter Sutphin look over the pit operations.

A Pass a Minute Throughout the Entire Shift

Stop-watch checking shows better than a pass a minute, in fact our own timing over a period of fifteen minutes showed twenty-four complete cycles on a 90-degree swing. In the present digging on

to the electrically operated jacks. He presses a button — the jacks release. The blast of an electric horn tells the operator all is ready. Throwing a lever which may be moved with a single finger puts the great machine in motion. She rolls forward easily and steadily, the caterpillar units following the contour of the ground. The pitman presses the buttons which cause the jacks to tighten, then gives the OK signal with the horn, and the 12-yard dipper slices up through the overburden once more.

Dual Control Permits Better Visibility

Of particular interest on the Central Indiana stripper is the dual control feature. There are two operating houses, one on either side. When changing direction for the return cut the controllers may be moved in a few minutes from one side of the machine to the other, permitting the operator to always work where he may have the greatest visibility.

Three Men Constitute the Crew for the Big Stripper

The method of operating the Central Indiana machine is also of interest. The crew consists of three men on each shift, *two operators and one pitman*. While one operator is at the controls the other oils and watches the machinery. In this way better care of the equipment is insured, and there is no excuse for any unnecessary delay. Also there

The gob is dumped back into the mined out cut.

is less fatigue for the operator, and the man on the machine is capable of a faster and steadier pace throughout the entire shift. At present operators change at each move, making four hours at the levers and four oiling, in periods of about one hour each for each man.

This system deserves careful consideration though it may seem somewhat revolutionary to many shovel owners, particularly in view of the fact that operation of these big electrics has been simplified and made far easier for the operator. No smoke, no steam, no vibration, a dipper trip that is worked by a slight pressure of the thumb on a button located on the end of one of the control levers, and levers themselves so easily operated that a child could throw them — all these things combined with a comfortable operating room set out in front like a porch with full-length windows all around providing complete visibility, sound like a "pretty swell dish" to most shovel operators.

Nevertheless the spell-off system is being tried out in several of the large stripping operations and at the Central Indiana at least the management is enthusiastic over the results. As the additional cost is only about three dollars per shift, when one considers the value of the machinery in charge of the operator and the enormous production of the machine, it can be readily appreciated that a very slight increase in crew efficiency will well repay the additional cost.

At the Central Indiana pit the overburden runs from a maximum depth of 45 feet to minimum of about 18 feet; the average being 35 feet. When fully opened up the cuts will be about a half-mile long, though at present they are only about 1800

Looking over the refuse settling basin one sees the upper part of the discarded 225-B over an old spoil bank.

feet in length. At present no blasting is required for the stripping operations, but blasting will be required in some of the heavy rock which will be encountered in the new working area.

At the left is the first shift crew of the 750-B; one pitman and two operators (L. T. Sifford and Ralph Kohr, right). The center view gives a complete view of the Allendale pit operations; coal loader, coal train, stripper and gob train are all clearly shown. You can even see the tractor with bulldozer cleaning up behind the 750-B. At the right is the second shift crew, two operators (W. T. Frye and V. Davidson) and one pitman.

Short Swings Make Most Economical Cycle

Width of cuts are about 50 to 55 feet, this giving, in General Superintendent Stewart's opinion, the most economical cycle. Long swings take time that can be more profitably spent in actual digging, says Mr. Stewart. The quick moves possible with caterpillar mounting render very wide cuts unnecessary, their only advantage being that they make fewer moves for a given yardage. With 50-foot cuts the average swing can be kept to not over 90 degrees.

Not twins, just two views of the Central Indiana stripper showing the duel-control feature. At the left the operator is working from the right-hand house, at the right from the left-hand house.

Present operation is two eight-hour shifts on a six-day week for the strippers, but this will be increased to three shifts as soon as tipple and track layout are ready for increased production. In this eight hours a fifteen-minute noon hour is taken during which necessary oiling on the boom is done.

Expect Present Production to Increase to About 350,000 Cubic Yards Per Month

Production so far has run as high as 5,700 cubic yards bank measure per eight-hour shift. It is considered, however, that yardage should easily run around 350,000 cubic yards per month when pit conditions become normal and offer no unusual delays not attributable to the shovel and when the big machine and its operators get well broken in. (The operators are the crew of the old 225-B steam machine which has been discarded and is now offered for sale.)

A recording voltmeter is being installed on the machine which will record each cycle, giving a check not only on the delays but the number of passes made. This, with the present system of checking the position of the machine at the end of each shift (so that yardage per shift may be accurately computed), together with the operator's report of delays on a sheet divided into five-minute periods, will give an absolute check on each operator's production and make for the most efficient operation.

75-B Electric Coal Loader Increases Lump by Digging Without Blasting

The Bucyrus-Erie 75-B, 3¼-yard coal loader furnishes an ideal machine to follow the 750-B. Electrically operated, this machine is handled by two men, an operator and one pitman. The wide coal-loading bucket cuts through the coal without blasting, and thereby saves powder costs and at the same time produces a larger percentage of lump than can be secured by a loader requiring blasting. Its size permits loading out in one shift the coal uncovered by the big stripper in three. Mechanical details of the machine will be announced in the equipment section of this magazine.

Sanford-Day Self-Dumping Cars Very Satisfactory

The coal is loaded into Sanford-Day 15-ton automatic bottom-dump cars. The hauling system is over a double track approach of 36-inch

Above is the Allendale zinc-covered tipple and washer; left shows coal loading from the tipple loading booms; center, a five-car train of Sanford-Days coming up the 1.7 per cent grade from the pit; and right, loading refuse into the Westerns at the tipple.

Left: Symon-Carves Washer. Center: Chief Engineer Baughman and General Superintendent Stewart discusses the operation of the Symon-Carves dewatering jigs which are shown at right.

gauge with a maximum grade of 1.7 per cent. Sixteen of the Sanford-Days constitute the hauling equipment, they being handled in trains of five cars each. This leaves a spare for taking care of repairs on bad orders. At present only two trains are being used but three trains will be needed to handle production when reconstruction at the plant is completed and its operations get into full swing.

Three Steam Dinkies Haul Coal to Tipple

Locomotives used in the previous operations are retained. These have been sent through the shop

A modern shop keeps Allendale equipment in first-class condition.

Beside the shop well-arranged racks keep material in order and protect it from weather.

in relays and put into perfect mechanical condition. There are two Vulcans, an American, and a Porter at Allendale, all 11 x 16 steam locomotives. Three of these will be used for hauling coal to the tipple, with one to haul the gob from tipple back to the pit. This gob is carried in the 4-yard Western side dump cars which were formerly used for hauling from the 35-B coal loader. The Westerns are spotted by gravity at the tipple, a train of empties being shoved in above the loading chutes by the dinky and a train of loads pulled out from below the chute.

The Sanford-Days dump automatically as the train passes over the 100-ton-capacity concrete hopper, no dump men being required. A lever at the side of the car is raised by a trip beside the track as the car comes over the hopper. This releases the doors in the bottom of the car, but these are held closed by the coal in the hopper until the car reaches a point where the hopper is no longer level full. Then the door drops permitting the car to empty. Each car has three doors, the front one dropping first, to be followed by the second and third as space in the hopper permits. A knuckle between the rails automatically closes the doors as they reach the far side of the hopper.

The tipple is completely sheathed with zinc, giving it a permanent covering unaffected by the sulphur gases released in handling the coal through the tipple.

Symon-Carves Concentrator, Developed in England, Used for Washing Coal

In the tipple, which has been enlarged and remodeled to handle the increased production, Link-Belt has furnished the new equipment necessary.

The Symon-Carves Concentrator is of all steel construction. (View under the tanks.)

Of greatest interest is the Link-Belt-Symon-Carves washing unit, the first installation of the kind in this country. This coal cleaner which washes the 1¼-inch screenings uses pulsations produced by compressed air to effect a very efficient and thorough washing of all impurities from the coal. Its efficiency may be most easily appreciated by picking up a handful of washed screenings from the

Symon-Carves dewatering screens over which the coal passes after leaving the separating tank. No trace of dirt or shale can be found and though the screenings be rubbed between the palms the hands are left clean. The original two-cell Elmore jigs are used to wash the 1¼ to 4-inch egg coal.

At the Robin Hood Mine a Bucyrus 320-B 8-yard stripper encounters a seam of hard rock in the lower overburden requiring blasting.

A Delatester for Gravimetric Testing of ash content in the coal by the float and sink method is used hourly to give a constant check on the work of the man operating the washing mechanism. By this means the ash of Amber Jacket coal is known at all times, efficiency of washers can be checked and adjustments made as necessary to insure a high-grade and uniform product.

General Electric 60-cycle, 440-volt motors furnish power throughout the tipple, giving a total of 350 horse power. An American Well Works 6-inch centrifugal pump, with capacity of about 600 gallons per minute, supplies water for the egg-washing unit and a Dean Hill centrifugal circulating pump, with maximum capacity of 2200 gallons per minute, furnishes water for the Symon-Carves system.

Waste water from the plant is put through a settling basin and filtered through straw to prevent sediment being deposited or carried into the creek to which water is returned.

Lump and 4 x 6 egg coal are both hand picked by a crew of ten experienced men to remove all slate and jack.

Loading booms are used and cars spotted by gravity. The empty yard has a capacity of 50 cars and the load yard the same. The Allendale plant is served by the C. I. & L. (Monon).

Robin Hood Turns Out 2000 Tons a Year of Washed and Hand Picked Coal

At the Robin Hood No. 1, stripping is handled by a Bucyrus 320-B steam shovel followed by a Bucyrus 35-B steam coal loader. In the tipple washing jigs clean the coal from 1¼ inches down, while the rest is hand cleaned on the picking tables. Connections at the Robin Hood are over the Pennsylvania Line.

20,000 Trees Set Out on Spoil Areas

Floyd Heaton had always operated steam machines and when another steam operator turned down a chance to run the new 75-B Floyd jumped at the opportunity. "Nothing to it," says Floyd, "I'd sure hate to go back to steam."

Reforestation on the mined-out areas is conducted at both mines under direction of the Indiana State Conservation Department. 20,000 trees, hardwoods, spruces and other conifers, have already been set out and are growing nicely. The best results have been obtained with seedlings which show a healthier growth than the older trees which have been transplanted. Continued reforestation goes on at the rate of five acres per year for each unit on the oldest spoil areas.

Officers of the Central Indiana Coal Company are: R. H. Sherwood, President, and B. E. Lundblad, Vice-President in Charge of Sales. Wm. H. Stewart is General Superintendent in charge of all mines and R. G. Baughman is Chief Engineer. At the Allendale, Walter Sutphin is Pit Foreman and Homer Miller, Tipple Foreman. At the Robin Hood, Fraik Justice is Pit Foreman.

At the Robin Hood we see (at the left) tipple and washing plant, (center) Bucyrus 35-B coal loader getting dressed up with her "winter front," (right) repair shop.

Diesel Dragline Excavates Irrigation Ditch in Tropics

Typical United Fruit Company Operation Successfully Reduces Silting.

Bucyrus Diesel dragline digs ditch with three meter bottom width. The spoil is being disposed of on one bank only, leaving a 12-foot berm.

ON one of the United Fruit Company plantations in the tropics it became necessary to lower the level of a main drainage artery a meter throughout its entire length of 4700 meters. The upper 3000 meters were to be given a 3-meter bottom and one and one-half to one bank slopes, while the remaining 1700-meter section required a 5-meter bottom with the same bank slopes.

To handle this work and assist in other improvements a Bucyrus 30-B Diesel dragline with a 45-foot boom was purchased. The machine was assembled nearby the point where it was to start work. The work was done during the rainy season, and the machine, though caterpillar mounted, had to work on mats all the time.

Silting Greatly Reduced by Downstream Methods of Operation

The ditch was carrying considerable water at a velocity of one meter per second. On account of this high velocity it was decided to dig down stream, so that the dirt lost from the bucket would be held by the one meter drop from the unimproved to the improved section where it would be picked up by the dragline. This method of excavating proved most successful, as the finished ditch, two months after the excavation was completed, averaged only 10 centimeters above the finished grade. On previous work where drainage canals were

This Type S Page Scraper Bucket is a veteran of 100,000 cubic meters.

EDITOR'S NOTE:

We are indebted to the courtesy of H. Rowe, chief engineer of the United Fruit Company, for the information and photographs used in preparation of this article.

cleaned out by digging upstream the beginning point had silted to a depth of 50 centimeters above finish grade by the time the job of cleaning was finished.

Cost 16.9 Cents Per Cubic Yard

The total cost of the work was $15,295 and the amount of excavation was 69,950 cubic meters. The above amount includes cost of moving to and from the job, preparing road and strengthening bridges, cleaning and grubbing, making mats, excavating labor, and excavating material.

An analysis of time record and cost account follows:

Elapsed time	257 days	100 %
Sundays and holidays not working	28 days	11 %
Waiting for repair parts	15 days	5.8%
Days worked	214 days	83.2%

The course of the improved section of the drain has been straightened wherever possible but always keeping the channel in the lowest ground.

The machine was operated on two daylight shifts working an average of 12½ hours per day. The operators were on the job 2,240 hours which is divided as follows:

Machine excavating	1788 hours	80%
Repairs to machine	209 hours	9%
Other delays	243 hours	11%

The excavation labor was all done by contract, the material for excavation being supplied by the company. The cost of Diesel oil was about 20 cents per gallon due to the high cost of transportation. (This may be compared with the cost for fuel oil in the states of six to eight cents a gallon delivered to the machine.)

The banks of the drains on which the Diesel dragline worked were wet and soft. Use of mats overcame the delays due to miring down and danger of turning over.

Output Shows Thirty-five Yards Average Per Gallon of Diesel Oil

No depreciation has been included in the cost figures. The following unit costs were computed from previous figures:

	Cu. Ms.	Cu. Yds.
Total volume moved	69,950	91,600
Output per hour working	39.1	51.3
Volume per gallon of Diesel oil	25.2	35.1
Cost of Diesel oil in cents per unit	0.85	0.649
Volume per gallon of lubricating oil	192.6	252
Cost of lubricating oil and grease in cents	0.614	0.562
Labor cost in cents excavation per unit	13.58	10.38
Total excavation cost in cents per unit	16.10	12.23
Total cost of job in cents per unit	21.9	16.70

Consumption of Diesel oil averaged one and one-half gallons per hour and lubricating oil averaged one and one-third gallons per eight hours.

On other operations we see here two of the Bucyrus steam draglines used for excavation on the United Fruit Company's Operations.

United Fruit Company Activities of International Benefit

The United Fruit Company is an institution serving more than 25,000 stockholders, and paying salaries to 68,000 employees. Its fruit is sold in every city and town of the United States and Canada and in nearly every country of Europe. It maintains plantations in nine foreign countries, and has a fleet of ninety vessels on the high seas. Its radio telegraph stations unite the Americas. It operates a network of railroad and tram lines.

A full load at each pass helps overcome the handicap of Tropic operation.

Irrigation Systems, Railroads and Highways Continually Improved and Extended

Extensive excavation operations are continually in progress throughout the United Fruit Company's large holdings. A great deal of this is in connection with drainage and irrigation of the plantations. Highway grading and railroad building also make up an important part of their activities. This company is at present operating twenty-five Bucyrus-Erie shovels and draglines, among which are the following: four 50-B steam machines, five 50-B Diesels, and three E-2 Diesels.

Health and Welfare of Employees Given Careful Attention

In addition to paying high wages to its employees, the United Fruit Company has installed and maintains for their well-being bakeries, ice plants, waterworks, churches, schools, baseball grounds, tennis courts, golf courses and swimming pools, and has contributed toward the national schools maintained in the vicinity of its plants. The Company has also aided students attending colleges, and schools in the United States, by extending reduced transportation to them, and it has aided in the establishment of agricultural schools where national and United States students will study tropical farming together.

In the last twenty-seven years the United Fruit Company has spent on hospitals and sanitation $13,091,424.00. The Company has built and maintains eight modern hospitals, with outlying field dispensaries for the benefit of its employees and the peoples of countries in which it operates. Including employees about 150,000 people depend upon medical and surgical service from the Medical Department of the United Fruit Company.

Sand and Gravel Production Continues to Increase

The production of sand and gravel in this country in 1927 amounted to 197,454,269 short tons, valued at $115,529,786 according to the United States Bureau of Mines, Department of Commerce. This was an increase of 8 per cent in quantity and of 4 per cent in value as compared with the large output of 1926, and was chiefly due to the increase in paving and road-making sand and gravel and railroad ballast.

The sand production was 93,588,339 short tons, valued at $54,291,398; gravel production was 103,865,930 short tons, valued at $61,238,388. About 76 per cent of the total production of sand and gravel was reported as washed and screened.

Sand and gravel sold or used by producers in the United States, 1926-1927:

	1926		1927	
	Short Tons	Value	Short Tons	Value
Sand:				
Glass	2,274,218	$ 3,615,371	2,171,693	$ 3,257,790
Molding	5,309,166	5,630,790	4,194,975	4,458,508
Building	45,327,512	24,891,475	40,737,377	22,198,767
Paving	27,476,998	14,970,906	35,606,622	17,767,491
Grinding and Polishing	1,859,215	2,504,514	1,686,762	2,193,690
Fire or Furnace	434,541	460,967	410,801	452,535
Engine	2,355,399	1,440,626	2,618,890	1,640,736
Filter	79,382	109,299	74,674	155,137
Other*	6,997,848	1,992,031	6,086,545	2,166,444
	92,114,279	$ 55,675,988	93,588,339	$ 54,291,398
Gravel:				
Building	30,535,396	$ 22,701,695	30,432,031	$ 21,947,606
Paving	38,319,064	25,445,025	44,891,975	29,887,365
Railroad Ballast†	22,132,079	7,516,003	28,541,924	9,403,357
	90,986,539	$ 55,662,713	103,865,930	$ 61,238,388
Grand Total	183,100,818	$111,338,701	197,454,269	$115,529,786

*Includes some sand used for railroad ballast and fills.
†Includes some gravel used for fills by railroads.

New York led all the states in sand and gravel production, with 19,896,766 short tons, valued at $12,157,612. Illinois was second, its output amounting to 19,328,703 short tons, valued at $9,166,934, and Michigan was third, with 15,419,499 short tons, valued at $7,800,541.

Modern Methods Jump Production 70% and Reduce Men on Pay Roll More Than One Half

One and Three-fourths Yard Steam Shovel and Trucks Handle Quarry Production at Jersey Limestone Quarries, Inc.

General View of Jersey Limestone Quarries.

IN November 1927 the Jersey Limestone Quarries, Inc., took over the plant and property of The Lime and Stone Products Corporation at Hamburg, Sussex County, New Jersey. The plant consisted of a crushing and screening plant with a 36-inch Kennedy gyratory crusher, a 36-inch belt conveyor to grizzlies and a 48-inch revolving screen set up over reinforced concrete bins. Quarrying was done by the bench method, using Denver air drills and jack hammers for block holing, air being furnished by an 850-foot capacity Ingersoll-Rand belt-driven compressor. The stone was loaded by hand into one and one-half-ton capacity pans and picked up by specially constructed, high-wheeled, horse-drawn carts such as are shown being loaded by hand in one of the illustrations which accompany this article. With this old method the best day's output on record was about 400 tons in 11 hours and there were as high as 62 men on the payroll.

New Management Installs New Equipment for More Economical Operation

When the new company assumed charge the entire management was changed and W. C. Diggs was placed in complete charge of operations. A 50-B Bucyrus steam shovel was immediately installed and two 7½-ton capacity Pierce-Arrow

Crusher and Screening Plant.

trucks were purchased to replace the horse-drawn carts. A Keystone well drill was moved in for drilling. With these changes quarry and plant now operate with a maximum force of 27 men instead of 62. Of the 27 there are 15 men in the quarry and 8 in the plant, with 4 engaged in work connected with both operations.

With the new equipment Mr. Diggs gets out easily as high as 680 tons in 8 hours. Average production is only 450 tons, but, says Mr. Diggs, "the demand for stone is not quite enough to keep us pushing and production is held down by the extreme care necessary in sorting and keeping different kinds of stone separate. In regard to the 50-B, there is no better shovel made for our kind of work."

Two Kinds of Stone Sorted in Quarry

The property consists of 70 acres of what is known as Franklin White Limestone, now worked

This quarry view shows contrast between old and new methods of excavation. At the left is the Bucyrus 50-B steam shovel loading into Pierce-Arrow truck. At the right is one of the old horse-drawn carts in which stone was loaded by hand. W. C. Diggs, General Manager, is standing under the boom of the shovel.

to a depth of 130 feet. In the deposit is both high magnesium and high calcite stone, and while the different formations are pretty well defined, they are pretty well mixed in the higher levels and require the exercise of the proverbial "eternal vigilance" to keep the two materials separate. Hence a comparatively small production for the shovel.

There has been recently developed a second quarry face for high calcite limestone, and two faces are now being worked, one about 90 feet and the other about 30 feet in height.

The Keystone driller sinks holes averaging about 30 to 90 feet in depth, about 15 to 20 feet center to center, drilling a single row of holes along the top of the bank above the shovel. These are loaded according to depth with 100 to 500 pounds per hole of Atlas, 40 to 75% dynamite and fired with electric blasting caps in groups of 8 to 5 holes. This method has been found to give good results and minimum oversize is produced. Oversize is set behind by the 50-B without delaying the loading and drilled with the Denver jackhammers for block hole shots.

Six Tons of Stone per Pound of Dynamite

The drilling cost per ton of stone runs about the same with the well drill as with air drills, but on the high face about 6 tons of stone per pound of dynamite is moved by the well drill holes against about 3 tons per pound using air drill holes.

The Jersey Limestone Quarries market their product in Northern New Jersey and Eastern Pennsylvania for use as flux and for the manufacture of cement.

The principal officers of Jersey Limestone Quarries, Incorporated, are: Harison Osborne, New York, New York, President, and G. H. Potter, Newark, New Jersey, Treasurer. W. C. Diggs, of Hamburg, New Jersey, is General Manager, R. R. Richards is Quarry Superintendent, and B. W. Allen is Shovel Operator.

Adequate Highways Urged for Flood Districts

Highways and bridges in the flood districts of Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi and Louisiana were damaged to the extent of $3,949,900 by the overflowing of the Mississippi River, according to the American Road Builders' Association. Most of the roads damaged have already been repaired in some degree.

Improved highways withstood the onrush of water without serious damage. Roads without improvement were in many cases virtually wiped out, causing an expensive delay in traffic, and curtailing the movement of necessary food and shelter supplies. Bridges were completely destroyed in sections where the foundations were not constructed to withstand the swift-moving waters.

The loss constituted less than 1.7 per cent of the estimated flood losses of $236,334,414 as compiled by the port of New Orleans. The most serious loss in the flood was that of growing or newly harvested crops, which totalled approximately $73,541,000.

The American Road Builders' Association urges the immediate construction of an adequate highway system designed to withstand the maximum flood waters in those sections subject to overflow. The existence of these roads will facilitate the salvage of personal property, protect human life, and permit speedy reconstruction of damaged areas.

It Might Be At That

Celia: "Wonder where Lottie gets all her cute clothes?"

Angeline: "Goodness only knows."

Celia: "I'll bet goodness has nothing whatever to do with it." — *The Staley Journal.*

Tat

Lad: "Does 'oo want to buy some tute 'ittle tittens?"

Lady: "What did you say?"

Lad: "Does 'oo want to buy some tute 'ittle tittens?"

Lady: "What is it?"

Lad: "Does 'oo want to buy a dam dood tat?"

The EXCAVATING ENGINEER

A Monthly Publication Devoted to Excavating and Allied Subjects

REGULAR SUBSCRIPTION: $1.00 a year for 12 numbers.
SPECIAL SUBSCRIPTION: Upon application on card inserted in this number, subscriber's name will be placed on Rotating List, whereby he will receive The Excavating Engineer frequently (not regularly) free of charge.

THE EXCAVATING ENGINEER PUBLISHING CO.
F. O. WYSE, Manager-Editor ARNOLD ANDREWS, Associate Editor
South Milwaukee, Wisconsin
Printed in the U. S. A.

The Business Situation

The business year of 1928 started doubtfully. Every indication pointed toward satisfactory conditions, and yet the average business man seemed to be a little more cautious than usual in feeling his way.

But all through the year business has gone ahead with a constantly increasing speed, spotty here and there to be sure, but sailing along nicely when considered all in all — a gradual crescendo which seems to have found expression in the "Hoover Market" on the New York stock exchange which is puzzling many as this is being written. The National City Company in their November letter give the following list of "the more commonly known measures of business volume" which appear to be headed for new records in 1928.

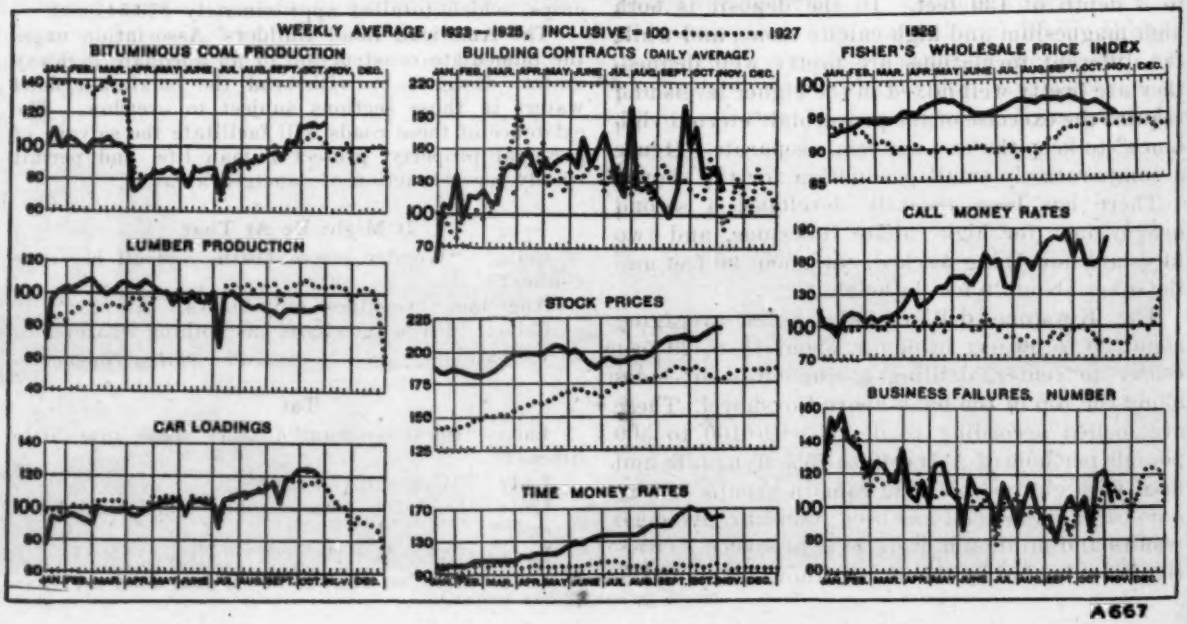
Checks cashed at banks	Flour milling
Industrial use of electric power	Industrial use of rubber
	Industrial use of silk
Building construction	Industrial use of chemicals
Steel production	
Automobile production	Rayon production
Agricultural implement output	Cigarette production
	Retail trade
Copper production	Electrical appliances output
Tin deliveries to mills	
Cement production	Aeroplane production
Gasoline production	Motor boat output

Of particular interest to us in the field of excavation are the first ten items. Significant also, and bearing directly on our industry, is the high level of activity in the building construction, steel and automobile industries.

New building and engineering work contracted for in the 37 States east of the Rocky Mountains during the past month was the highest October contract total on record, according to F. W. Dodge Corporation. Last month's total, $597,103,500 in amount, was 3 per cent ahead of the September 1928 total and 6 per cent over the October 1927 total. The above figure includes about 91 per cent of the country's total construction, and is segregated into eight districts which are reviewed below. When comparisons were made with the October 1927 records it was found that the only district where there was a decrease was the Central West.

The October building record brought the total amount of new construction started in these states since the first of this year up to $5,724,047,600, as

WEEKLY BUSINESS INDICATORS



compared with $5,359,297,900 for the corresponding period of last year, the increase being 7 per cent.

Analysis of the October contract total showed the following outstanding classes of work: $239,691,900, or 40 per cent of all construction for residential buildings; $148,696,500, or 25 per cent, for public works and utilities; $67,330,400 or 11 per cent, for commercial buildings; and $62,258,700, or 10 per cent, for industrial projects.

New contemplated projects as reported last month in the 37 Eastern States reached a total of $616,933,100. This was an increase of 18 per cent over the amount reported in the preceding month and a gain of one per cent over the October 1927 total.

The farmer's position today is a good deal better than he has thought it was for some time past. The year has been one of very high agricultural production and prices have not dropped and discounted the advantage of the large crops. It should be remembered that much of our grain is used to feed animals and reaches the consumer in the form of dairy products or meats. The high prices of these products during the last year have helped to ease the farmer's worries.

The automobile industry shows an increase in earnings of about twenty per cent over that for the same period for last year. Iron and steel have increased earnings fourteen per cent; railroads show an increase of 1.3 per cent; metal mining 21.7 per cent; building materials 5.9 per cent. Industrial consumption of electric power is very high at the present time — the figure for September showing an increase of 34½ per cent over the average for 1923 to 1925.

A remarkable thing about the New York stock market at the present time is the general participation of the public, indicated not only by the tremendous number of shares changing hands but also by the fact that "brokers' loans" have increased in nothing like the same proportion as the number of shares traded. Apparently much buying of stocks is being done without recourse to the normal amount of borrowing — a factor which makes it still more difficult to predict the market's future behavior.

Construction on Revelstoke-Golden, British Columbia, Highway

This last link in the northern section of the Trans-provincial Highway will soon be under construction. Reconnaissance surveys have been completed, which recommend the construction of the new road through the Glacier National Park. The entire distance is approximately 90 miles, 57 miles of which will lie within the federal territory. The construction of this road will cut the travel time from Calgary to Vancouver from five and a half to three days, and provide a route through Banff and Lake Louise.

CONVENTIONS

JANUARY 1929

13th Annual Convention
NATIONAL SAND & GRAVEL ASSOCIATION
Cleveland, Ohio. Jan. 9th to 11th, Incl.

26th Annual Convention
AMERICAN ROAD BUILDERS' ASSOCIATION
(and "ROAD SHOW")
Cleveland, Ohio. Jan. 14th to 18th, Incl.

12th Annual Convention
NATIONAL CRUSHED STONE ASSOCIATION
Cleveland, Ohio. Jan. 21st to 24th, Incl.

From THE MAIL BAG

Katni, India, October 9, 1928.

Sir:

In your issue Vol. XXII, No. 8, of August, 1928, page 298, you give particulars of the products of the Waukesha Lime and Stone Co. This interests me here, as I am in the same line.

If there is no objection I would like to know:

1. The rates at which they sell their different products there?
2. An analysis of their limestone?

In this country they use slaked lime in place of crushed limestone for manure in the tea gardens. Below is a copy of the analysis of limestone used here.

We also sell bauxite which is mixed with lime for manure. The rate of bauxite is Rs. 6/8/ ($2.30) a ton and lime 9/8/ ($3.35).

An exchange of views might help both parties in some things, hence the reference.

Yours very truly,
(Signed) G. H. COOK.

ANALYSIS OF MESSRS. G. H. COOK & SONS KATNI LIMESTONE

Analysis Certificate by Messrs. Smith, Stanistreet & Co. of Calcutta.

Hygriscioue	Nil
Insoluble	3.034
Iron and Aluminum Oxides	3.250
Calcium Oxide	49.179
Carbon Dioxide	40.426
Combined Water Alkali	4.114
	100.000

EDITOR'S NOTE: Mr. Cook's letter has been referred to the Waukesha Lime and Stone Company for reply. We suggest *Excavating Engineer* readers who have similar problems may find it of interest to correspond with Mr. Cook.

FIELD NOTES

Boilers and Fuel Economy on Steam Machines

By Fred J. Brewer, Superintendent of Outside Construction, Bucyrus-Erie Company.

THE operator should be in charge of the machine, and his instructions should be followed by the crew. Both he and the fireman, as well as the other members of the crew, must work together to bring about the best results.

The fireman is a very important factor in the saving of fuel and water, and can bring about this saving by burning the minimum of fuel necessary, and by taking an intelligent interest in the condition and operation of the machine. Explaining to a new fireman the reasons why certain methods should be pursued in handling his work in order to bring about the best results, and directing his attention to improper methods of firing, will result in a saving of fuel.

When filling a horizontal tube boiler before a fire is started, care should be taken that it is filled only so that the water glass shows half full, or water runs from the second gauge cocks. This will leave space for expansion of water and so that the injector can be worked to prevent the safety valve from popping.

In a vertical tube type boiler the upper ends of the tubes are not submerged in water for a distance of 12 to 24 inches, but pass through the steam space. While the boiler is in operation these upper ends of the tubes are exposed to the heat of the fire on one side and the cooling effect of the steam on the other. When a fire is first built in a cold boiler of this type, and if the water is carried at the usual working level, then the upper ends of the tube are exposed to the heat of the fire on one side without any cooling agent on the other, with the result that they will become overheated and may "work" in the upper tube sheet.

This condition can be avoided if the following method is used: Instruct the fireman, before leaving the boiler at the end of the shift when the fire is put out, to start the injector, filling the boiler until the injector refuses to work. This should leave the boiler practically full of water, covering the tubes their entire length. When the fire is again started, the tubes cannot overheat as they are protected. It will be necessary, however, to open the whistle valve to allow any excess water to escape as it heats up. When twenty or thirty pounds of steam is available, blow the boiler down to two gauges of water and close the open valves.

This practice should always be followed for this type of boiler equipped for oil burning, owing to the great intensity of the oil fire.

This practice is recommended for coal or wood burning vertical boiler. If for any reason the boiler is not entirely full of water when starting a new fire, the condition should be always approximated by building a light or slow fire until at least 20 or 30 pounds of steam is available.

In vertical boilers the most common causes for leaking tubes, are:

(a) Overheating the tubes when building a new fire, thereby causing excessive expansion, will cause them to work in upper tube sheet, thus allowing them to become loose.

(b) Allowing dirt and scale to accumulate on the bottom tube sheet and around the bottom end of the tubes. This accumulation will cause the tubes and sheet to become overheated. If once overheated and cooled, the tubes will be loose.

(c) A quantity of oil, so small that it is hard to detect, will often cause the tubes to leak. It may enter the boiler with the feed water or it may enter the boiler when it is being cleaned.

The grates should be kept clean and free from dead ashes and clinker. The grates should be kept in a level position to prevent the fingers or edges of the bars being burned off. The ash pan must be cleaned as often as the work of the machine permits and at regular periods.

(To be continued next month.)

Fewer Accidents in Quarry Industry in 1927

Marked progress was made by the quarry industry in the United States in the reduction of fatal accidents among its employees in 1927 according to reports furnished to the United States Bureau of Mines, Department of Commerce. The death rate from accidents was lower than ever before, with the single exception of the year 1924, in which year the death rate was the same as that for 1927. The non-fatal injury rate, covering all "lost-time" injuries, was slightly higher than in the preceding year, but it was lower than in any other year since 1920. The number of men employed at the quarries and the number of shifts worked by them were substantially the same as in 1926. The average employee worked the same number of days in 1927 as in the year before.

Reports from the operators showed 91,517 men employed in the calendar year 1927, who worked 24,782,561 man-days, an average of 271 work days per man. One hundred and thirty-five deaths and 13,459 injuries from accidents were reported. As compared with 1926 these figures showed an increase of 371 employees, 74,161 shifts, and 258 injuries. There was a decrease of 19 in the number of fatalities. Accidents during the year represented a death rate of 1.63 and an injury rate of 162.92 per thousand 300-day workers as compared with a death rate of 1.87 and an injury rate of 160.28 in 1926.

The principal causes of accidents inside the quarries were handling rock at the face, flying objects, falls or slides of rock or overburden, haulage, and machinery. Accidents at outside plants were due mainly to flying objects, machinery, falling objects, haulage, and hand tools.

EQUIPMENT YOU OUGHT TO KNOW ABOUT

Bucyrus-Erie "75-B" Can Often Handle Work for Which 3-yard Shovels Have Formerly Been Used

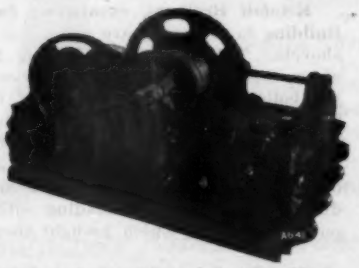
The new Bucyrus-Erie 75-B quarry and mining shovel is equipped with a 2½-yard dipper and yet operates with the same speed as the two-yard machine.

Quarrymen, and contractors who have considerable heavy rock work, quickly appreciate the economies of the new Bucyrus-Erie "75-B," a 2½-yard shovel with a capacity suitable for many quarries or construction jobs where, lacking a shovel of this size, it has previously been necessary to use a 3-yard machine.

As compared with the 2-yard shovel, the 75-B gives 25 per cent larger output, loading 150 to 200 tons of rock per hour with average working conditions, and even more when digging and hauling factors are favorable.

Shovel users who have been waiting for the development of a 2½-yard machine will be particularly interested in the fact that the 75-B is not merely a 2-yard shovel that has been "stepped up" at some points and equipped with a 2½-yard dipper.

The entire machine has been designed and built, from the ground up, to handle the standard 2½-yard dipper in rock and similar heavy work, and give steady uninterrupted output.



The main machinery of the 75-B is rugged and simple; it is readily accessible and there is plenty of room inside the house.

Built Along the Same Lines as the 3-yard and 4-yard Bucyrus-Eries

The similarity to the "100-B" and "120-B", Bucyrus-Erie 3-yard and 4-yard rock shovels, is evident to owners and operators of these heavy-duty machines — as the 75-B has been designed with the same rugged strength.

All machinery is easily accessible and practically arranged, with plenty of room around it inside the house.

Like the Bucyrus-Erie 3 and 4-yard quarry shovels, the business end of the 2½-yard machine is made up of a sturdy box girder boom straddled by two outside handles. The box girder is the strongest practical type of boom, and makes great strength possible without unnecessary weight. The outside sticks have no "prying apart" action on the boom.

As the dipper handles are as long as those of the 3-yard shovel and the boom only six inches shorter, the working radius of the 75-B is very nearly as great.

In the truck frame all propelling gears, except those of the last reduction, which are inclosed within the girder castings of the mounting, are above the bottom clearance of the truck frame — where they cannot be damaged by rocks, stumps and other obstacles when the machine is moving.

The hoist on the 75-B, like that used on other Bucyrus-Erie 3 and 4-yard quarry shovels, is a single hitch twin rope, which has proven to be so unusually efficient and economical as compared with a three-part hitch. With only one sheave on the boom and without the padlock sheave at the dipper, the bending of the rope is reduced to a minimum with resulting increased rope life. This efficient hoist permits the use of the power from the motor in doing useful work rather than overcoming friction of additional sheaves.

The large diameter, narrow-faced rollers of the 75-B caterpillar mounting automatically clean the track on which they run. The bearings are high out of the mud and grit.

The main machinery is all mounted on one single steel casting of deep section that forms the forward part of the revolving frame.

As on the 3 and 4-yard Bucyrus-Erie shovels, Ward-Leonard multi-voltage control with separately excited direct current motors is used, providing the greatest possible ease and flexibility of operation.

Another important feature is the elimination of the clutch and brake in the hoist machinery, providing smoother and faster operation — with less tiring effect on the operator. Regenerative lowering of the dipper on the motor reduces the net power consumption, gives the operator absolute control of the dipper under all conditions and reduces operating costs.

The 75-B is a shovel for the medium-sized quarry. It has the power and strength to handle the toughest kind of digging. Where the duration of the job warrants an electric installation it is an ideal machine for a heavy construction job. It is used, equipped with a 3¼-yard dipper, behind 12 and 16-yard strippers for coal loading. It is available as a dragline excavator.

SHOTS FROM THE FIRING LINE

Panama Canal Zone

Col. Harry Burgess, Engineer Corps, United States Army, was sworn into the office of Governor of The Panama Canal in the morning of October 16, 1928, his appointment having been made by the President of the United States, subject to confirmation by the Senate, to succeed Brigadier General M. L. Walker, upon the expiration of General Walker's term of four years. Colonel Burgess is the fifth Governor, and, as has been the case with all Governors except General Goethals, the first, who was previously Chairman and Chief Engineer of the Isthmian Canal Commission, has served four years as Engineer of Maintenance before succeeding to the Governorship.

Mexican Notes

BY J. I. MOREVEC

Contract has been let to the International Willete Company, Torreon, Mexico, for the construction of the section beginning 20 kilometers from Guaymas and ending at Hermosilo on what is said to be a cost plus ten per cent basis. This organization has also been ordered to survey the Hermosilo-Nogales section. The road throughout its length is to be 8 meters in width instead of 6 meters as previously planned.

Building a road from Guaymas to Empalme is proposed to follow more closely the present railway track. The distance between the two places would be reduced from nearly 10 miles to about 4.5 miles, but the cost at the present time appears to be prohibitive since nearly two miles would have to be built over water.

The road from Acapulco to Pie de la Cuesta, that has been under construction by the Acapulco Chamber of Commerce, has now reached 8 kilometers, or about two-thirds of its length has been built. A force of about one hundred native workmen have been continually employed on this project and it is expected that it will be passable its entire length by the end of next December or January.

Canada

Toronto and Vicinity

BY C. F. ENGLAND

The Nelson River Construction, Limited, are making good progress on the Yonge Street Subway. This work is in connection with grade separation at the Toronto Terminals.

W. H. Thompson is keeping his Erie shovel busy on building excavation here in the city.

R. C. Huffman Construction Company are getting along nicely with excavation and bridge work in connection with the new Canadian National Railways Station work at Hamilton.

F. F. Fry, Limited, have recently been awarded contract for sewer construction in the town of Port Colborne, Ontario.

Quebec Notes

The Provincial Government of Quebec is calling for tenders now for a lot of road work to be constructed in the spring of 1929.

Quebec Trunk highways are to be kept open in winter according to an announcement by the Minister of the Roads Department. Large motor snow plows will be used, the purchase of which will be made shortly. Several types of snow plows will probably be tried. Snow fences and other anti-drift methods will also be used.

Over 175,000 trees have been planted along the main highways of the Province of Quebec during the last two years. The Government is promoting an embellishment movement among the residents along the roads.

The continuation of the Levis-Rimouski Highway, to encircle Gaspe Peninsular, has been completed and opened to traffic. This enables American tourists to motor along the St. Lawrence River beyond Rimouski to Gaspe and thence back to the United States through the Province of New Brunswick. This area opened is largely primitive and unsettled, abounding in game and fish.

Poulin & Boily, St. Georges East, Quebec, have been awarded contracts for gravelling on Levis-Jackman Road ($38,010) and gravelling on St. Georges-Las Frontiere Road ($3,828).

The Roads Department, Parliament Buildings, Quebec, Quebec, has placed a graveling contract with E. Bourgoin, St. Henri de Mascouche.

Montreal and Vicinity

BY J. M. WARD

Kendall Brothers, excavating for the Dominion Square Building in Montreal, are using two Bucyrus-Erie B-2 steam shovels. This new office building is to be thirteen stories above the ground, with four stories underground, including the boiler room. One portion of the job was held up as buildings could not be wrecked on account of existing leases. About a little over one-third of the excavation has been completed. They took out 20,000 yards of earth and 14,000 yards of rock in 50 days, working night and day. The two shovels did all this excavation, loading onto trucks which were run onto an elevator which brought them up to the street level.

The Dominion Government is at present considering a proposition from the Beauharnois Power Corporation regarding the development of 2,000,000 horse power. As this would have some effect on the St. Lawrence Waterways scheme, should this latter ever be developed, it is doubtful if the Government will consent to the Beauharnois Development. However, their decision should be known shortly.

Foundation Company are steadily at work on the contract which they have for the Mersey Paper Co. at Liverpool, Nova Scotia. Seven small shovels are on this job.

SHOTS FROM THE FIRING LINE — Continued

Ambrose Macdonnell has a subcontract for grading on the new Chibougamou Railroad Line.

The construction of a cross-island boulevard for Ste. Anne de Bellevue to Bout de l'Ile is favored by the Metropolitan Commission of Montreal, Quebec, of which Alderman Gabias, City Hall, Montreal, Quebec, is chairman. The Commission will probably submit a report to the next session of the Legislature.

Manitoba

Stevens Bros., Ltd., of Winnipeg, Manitoba, have received contract for grading 26 miles in the municipalities of South Cypress and Oakland. The work will cost $76,691.

Florida Notes

R. J. TURNER

We have just learned of the recent death of R. J. Turner, late controller and associate in the Everglade Construction Corporation of Miami, Florida. Mr. Turner's passing brings deep regret to his associates and many friends throughout the field of excavation.

New England Notes

BY J. C. ALEXANDER

Carlo Bianchi, Inc., Framingham, Massachusetts, has about finished their eight-mile concrete paving job in Vermont. Wet weather slowed the work considerably in the beginning but with the summer came the usual runs of 1200 feet. This company is now completing another job in Franklin, New Hampshire.

The J. F. White Contracting Co. has had a busy season as their seven Erie shovels have been on the go at all times.

The PLYMOUTH LINE OF GASOLINE AND DIESEL LOCOMOTIVES IS COMPLETE FROM 2 TON TO 50 TON SIZES

TIME IS THE TEST. IT'S THE SAVING IN OPERATION COST THAT COUNTS.

PLYMOUTH LOCOMOTIVE WORKS
The Fate-Root-Heath Company
277 Riggs Avenue PLYMOUTH, OHIO

Page Buckets
DISTINCTIVE AND EXCLUSIVE
Standard of the World
PAGE ENGINEERING CO.
844 RUSH ST. CHICAGO — U.S.A.
DRAG SHOVELS — DRAG LINES — BUCKETS — SLACK LINES

A SMOOTH FIRM GRIP

No jerking or grabbing with *Asbesgraphite!* On shovels, dredges, draglines, cranes, hoists, pavers, trucks, etc., this Gatke product has proved its ability to give longer life, trouble-free service, and ability to speed up operations because of better and smoother control.

Asbesgraphite is a self-lubricating, non-scoring asbestos friction material unaffected by heat, cold or moisture.

It ends friction troubles.

You are missing a bet if your machines are not Asbesgraphite equipped. The cost of a trial installation is negligible. It's not an experiment, for we guarantee satisfactory service—*order today.*

It is not Asbesgraphite unless it is marked "GATKE"

We also manufacture Asbestos Brake Lining in any width, thickness or length

ALL SIZES CARRIED IN STOCK

For Marion, Bucyrus, Monighan, Osgood, Northwest, Byers, Ohio Locomotive, Industrial, P. & H., Keystone Driller, Massillon, Thew, Erie, Page, Moore Speedcrane, Link Belt, And Others.

THOMAS L. GATKE
Manufacturer
Chicago Office: Railway Exchange Building
Factory: Winona Lake, Indiana

ASBESGRAPHITE
ASBESTOS COMPOSITION

For Allis-Chalmers, Nordberg, Wellman-Seaver-Morgan, Ottumwa Iron, Lidgerwood, Mundy, Flory, Mead-Morrison, Orr & Sembower, Clyde, American, Lambert, Thomas Elevator, And Others.

SHOTS FROM THE FIRING LINE — Continued

The Highway Departments of the various New England States are about to let their usual winter heavy grading projects. It is expected that the bidding will be highly competitive.

Saw Gene McGee and Jerry Minnehan the other day. This crew is running for the New England Rock Excavating Co. and are as great kidders as ever.

Visited Herbert Wright at his job in Sturbridge, Massachusetts, recently. The Gas + Air, two years old now, is working wonderfully and is busy moving bouldery clay. Some of the boulders range as high as 15 cubic yards and had not Herb himself told us we would not believe their moving to be possible.

Joseph Malaguti & Sons of Plymouth, Massachusetts, have been doing excellent work with their Bucyrus-Erie 1030 gas shovel. Six to seven hundred yards a day has been their average yardage moved with no breakdowns whatsoever.

The University Excavating Company have just completed a large cellar job for the new Metropolitan Hospital in Waltham. Carlie Plaza and Harry Hull are very much pleased with their Bucyrus-Erie "B-2" steamer.

Bill Mahar is still running the GA-2 owned by Osborn-Barnes of Danbury, Connecticut. He and his helper, Fred Mignerey, are keeping the rig shined up as usual and are still working in their Sunday clothes.

L. H. Skelton has gone to work for the West Construction Co. on their GA-2 dragline at West Rutland, Massachusetts. This is the new $9,000,000 water supply job for Boston and vicinity.

HAYCO

Builders of Buckets:
Clam Shell
Orange Peel
Drag Line
Electric Motor

Machinery:
Dredging
Excavating
Coal Handling

Takes Rocks or Mud

ROCKS are no obstacle when you are digging with a Hayward Orange Peel Bucket. Its powerful jaws hold the big stones in a secure grip. Yet, you can handle soft mud advantageously with the same bucket. It takes a big load every trip — it closes tightly and prevents the soft earth from oozing through.

This all-around contractor's bucket and other Hayward Orange Peel types are described in bulletin 655. Send for your copy.

THE HAYWARD COMPANY
56 Church St. New York, N. Y.

Hayward Buckets

Bates Tractors

BATES 70

3 Sizes

BATES 28 — Made for 8-foot Graders and equipment of similar capacity.

BATES 40 — Made for 7-yard CrawlerWagons, 10-foot Graders, etc.

BATES 70 — Made for 12-foot Graders and any of the largest tractor tools.

What Bates Customers Say:

"I am well satisfied with the Bates Tractor. Before I bought the BATES "40" I saw one pulling the largest size Russell Grader and it handled it in good shape. I think the long crawlers are a *lot better*."
— An Illinois Contractor.

"We own a BATES "40" tractor, and have been running it ever since we got it in. Have not had one minute's trouble with it so far. We have 5 or 6 different make machines in our county and I consider this the best tractor that we have ever bought." — From a Tennessee Highway Commissioner.

Write for New Catalog.

Bates Manufacturing Company
JOLIET, ILL., U. S. A.
Established 1883

Pioneers in the Tractor Industry

"1/3 to 1/2 more service with TRU-LAY rope!"

This Insley shovel, equipped with Tru-Lay rope, is busy digging away surface soil to permit street paving. Tru-Lay is giving 1/3 to 1/2 more service than ordinary rope, according to the contractors on the job.

says the superintendent of a large construction company (name on request). After trying several competitive brands, he found that Tru-Lay lasts longer and cuts rope costs.

Tru-Lay brand owes its superiority over ordinary rope to its preformed construction. Every wire and every strand is laid in place—preformed, not twisted. Torsional stress is eliminated, all of the strength of all the wires is utilized. The result is longer life and lower wire rope cost per year of service.

A test will convince you of these Tru-Lay advantages. Your name and address will bring sample and complete information.

AMERICAN CABLE COMPANY, Incorporated

District Offices: Chicago Detroit Philadelphia Pittsburgh San Francisco Tulsa

Grand Central Terminal Bldg., New York, N. Y.

An Associate Company of the American Chain Company, *Incorporated*

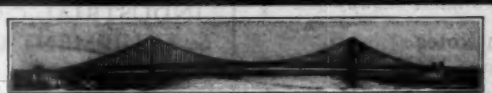
Dominion Wire Rope Company, *Limited*, Montreal
Sole Canadian Licensed Manufacturers

PREFORMED WIRE ROPE

TRADE TRU-LAY MARK

Reg. U. S. Pat. Off.

Detroit International Bridge



Philadelphia-Camden Bridge
The World's Greatest Suspension Bridge

Mt. Hope Bridge
Bristol, R. I.

AMERICAN CABLE IS USED ON THE WORLD'S GREATEST BRIDGES

In writing to American Cable Company, Inc., please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Dan Keefe is back with T. Stuart & Sons, running a Bucyrus 20-B clamshell on the new Boston North Station project.

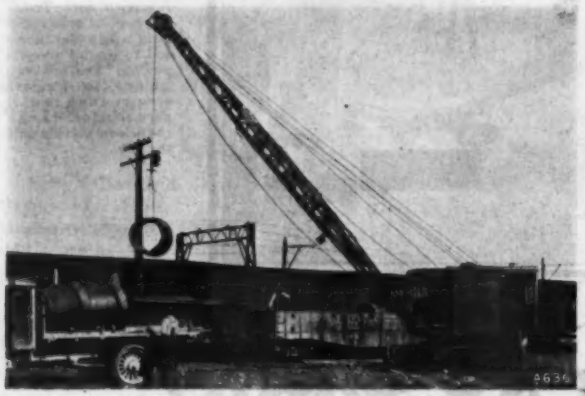
Jimmie Ring is sojourning in Vermont, where he is operating P. J. Holland's GA-2 at Waterbury.

Bill Lane is still operating the 1¼-yard Osgood for the Edward Balf Co. at Hartford.

James Gillis, operator on one of the New England Rock Excavating Company's Bucyrus-Eries, had his leg broken in an unfortunate accident. Best of luck to you Mr. Gillis and we hope you will be back at the levers in the very near future.

New York City Notes

BY T. A. BURNS



W. J. Gallagher of Medina, New York, is using his Type 1030 Bucyrus-Erie Crane for handling vitrified and cast iron pipe from cars to trucks which haul out to the job. Fast work yet careful handling to avoid breakage is required here, making the "1030" particularly well fitted for this chore.

There is a new show on Broadway at 52nd Street. No music with it but lots of drama, or it might be captioned with some reference to a "Strongman." John Bernardo, Jr., at that point is operating a shovel in competition with two crews on two other shovels of the same size. John loads three trucks to their one regularly, and on some occasions five to one. What a Man! What a Man!

Gene Masterson is now carrying on the business of his deceased father, and his friends and business associates are confident that his business will prosper.

Carlo Petrillo is the latest successful subway bidder. Smiling Carlo — more than a happy warrior, a successful contractor. An eye for men, good work, and — but this is another matter.

The Cogan Company, Triest Company, and Rodgers and Haggerty have all started on their new subway work in Brooklyn and Queens, and the Rosenthal Company are well under way.

For those who do not believe in Evolution, it would be advisable for them to see the air tunnel shovels on the McGovern New York Water Tunnels, and the small electric tunnel machines on the Cogan Company's latest subway job.

Anthracite Region Notes

BY T. H. BARRETT

J. Robert Bazley of Pottsville is well started on his Locust Gap Stripping for the Philadelphia & Reading Coal & Iron Co. His equipment includes a Bucyrus-Erie 120-B electric, 4-yard shovel, American Car & Foundry 10-yard dump cars,

When Winter Comes

(and days are shorter)

You can't even break even on winter work if you let short hours add their profit — stealing to the rest of your troubles.

Put on a light-plant and at least get in a full day's work.

And get the right plant — that is important.

There is a plant that exactly fits your machine, whether it be large or small and whether it be driven by steam, gasoline or Diesel engine.

BUCYRUS-ERIE is ready to supply this plant and to give you definite information as to placement of plant and lights.

BUCYRUS-ERIE COMPANY

SPECIALTY DEPARTMENT

South Milwaukee, Wisconsin

BUCYRUS ERIE

KOPPEL

KOPPEL CARS

You'll find the best answer to the question, "what is the best type of quarry car for my purpose?" in the Koppel Quarry Car Catalogue, containing full descriptions and illustrations of over 20 different types for every conceivable quarry requirement.

In the type of car illustrated, great care has been exercised to properly reinforce the body and underframe at all points necessary in order to provide a car for rugged endurance for the hardest kind of quarry service. As a result we furnish ideal cars for stone quarry work.

KOPPEL INDUSTRIAL CAR & EQUIPMENT CO.

KOPPEL, PA.

NEW YORK PITTSBURGH CHICAGO SAN FRANCISCO

TWIN CITY ENGINES

IT takes power to handle rocks of this size. A Twin City 6¼ x 8 4-cyl. Engine powers the Northwest Shovel Model No. 105 shown above. Owned by Mather & Block, Los Angeles, Calif.

Write for full information regarding Twin City Engines for YOUR requirements.

MINNEAPOLIS STEEL AND MACHINERY COMPANY

Minneapolis, Minn.

Heavy Duty Engine Manufacturers Since 1903

The Ever-increasing Chain of TWIN CITY ENGINE Users includes the following:

"BUILT TO DO the WORK"

35 to 140 H.P.

Browning-Cranes · Austin-Trenchers · Baldwin-Locomotives · Buckeye-Trenchers · Bucyrus Shovels and Cranes · Cement-Gun-Contracting Co. · North-West Shovels · Parsons Trenchers · Pennsylvania Compressors · Sargent Draglines · Star-Drilling Machine Co. · Washington Logging Engines · Willamette Logging Engines

In writing to Minneapolis Steel & Machinery Co. plea se use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Vulcan Locomotives and Loomis well drills. A feature of the latter equipment is a steel cable with spring shocks at the bit and under the crown sheave bearings.

Lehigh Coal & Navigation Co. of Lansford have had their Summit Hill Stripping operating three months and are averaging better than 1600 yards per day. A Bucyrus-Erie 120-B electric shovel is doing the digging. In two more cuts they expect to reach the fire area which has been burning in the "top-slate" for over 60 years.

Dick Construction Co. of Hazleton has been awarded a contract for removing 1,500,000 yards of overburden by the Buck Run Coal Co. and will use a Bucyrus-Erie Class-200 electric dragline on the work. This large stripping machine on caterpillars in the hard coal region will make the operation of particular interest and will be given close attention by other contractors and coal companies in the region.

J. W. Boyle of Freeland has secured a contract from Tony Rose of Wilkes-Barre for the salvaging of a coal cropping near Dupont, Pennsylvania.

Central Pennsylvania Quarry Stripping & Construction Co. of Hazleton have secured an extension of their work at Raven Run, Pennsylvania. Their Bucyrus 100-B steam shovel is being moved over to the new work.

Rhoads Contracting Co. of Ashland have secured an extension to their stripping at Mid Valley and plan to get out a record yardage before the first of the year.

Haddock Mining Co. of Wilkes-Barre have purchased a Bucyrus 70-C caterpillar shovel from the Locust Mount Coal Co. and are working it at their stripping near the Candlemas Colliery.

Why Loomis "CLIPPERS" Predominate in the Blast Hole Field

If you know "CLIPPERS" you will appreciate why "CLIPPERS" were chosen to put the holes down ahead of these giant strippers.

For hard drilling and fast drilling the "CLIPPER" can't be beaten. The holes go down and your drill footage goes up hour after hour, day after day, month after month. The machine, exceptionally fast, is even more remarkable for the sturdy stamina and special features of construction which cut down delays and save you money. *Write us for information.*

THE LOOMIS MACHINE CO.

(Established 1842) K Street, Tiffin, Ohio

What you really buy

is the service you obtain from a wire rope.

ROEBLING "BLUE CENTER" STEEL WIRE ROPE is selected by the largest shovel manufacturers as a part of their standard equipment because of its long life in service.

"Blue Center" successfully and enduringly handles the work it is given to do and is the choice of discriminating engineers for every purpose for which wire rope is used. Made in standard sizes and constructions particularly adapted to your requirements.

Have you our latest catalog—A-545?

JOHN A. ROEBLING'S SONS COMPANY Trenton, New Jersey

SHOTS FROM THE FIRING LINE — Continued

Prospects for continuous work for the region as a whole look bright. Many of the large coal companies have strippings planned which will net them cheaper coal than that mined underground. Among those who have extensive strippings planned, are Reading Coal & Iron Co., Lehigh Reading Coal & Iron Co., and Hudson Coal Co.

North Carolina Notes

Hedrick & Wade, Inc., Lilesville, North Carolina, use the above Class-24 3½-yard Bucyrus steam dragline to load sand and gravel from their pit. The present output is about 2500 yards of sand and gravel per day. Material is loaded from the pit by the dragline into 8-yard dump cars which carry it to the washer.

Southern Ohio Notes

BY S. R. WALLER

Sterm-Dillard Co. of Columbus, Ohio, have been awarded one section of eleven miles of railroad work on the Kentucky-West Virginia state line on which there is over one million yards of rock to be moved. Mr. Dillard says this is rough country and we understand the work is progressing nicely.

John Shanklin and Frank Roush of the Roush Construction Co. of Covington, Kentucky, have just completed the grading work on one section of the Cincinnati Parkway System extending north to the Reading Road. The Hinkle Construction Co. have the section adjoining, and when completed this will open a complete boulevard from near down town Cincinnati to Reading Road.

Evan Hayes of Madisonville, Ohio, is operating one of the three Bucyrus-Erie Type B-2 shovels being used on the Cincinnati parkway.

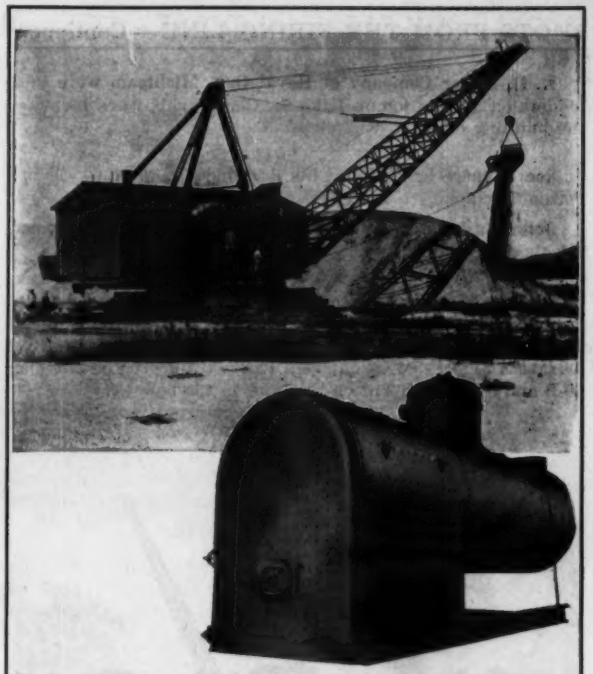
Harry Wangh of Bluefield, West Virginia, and Morris-Gray-Hunter of Roanoke, Virginia, are progressing nicely on the Norfolk & Western Railroad work at Columbus, Ohio. Turner-Brown Company are doing the concrete work on that part of the job being done by Morris-Gray-Hunter. This is a good-sized job and will require between two to two and one-half years to complete.

Robert J. Richardson has a very satisfactory excavating contract at Dayton and Freeman over in Cincinnati, Ohio. The new school to be located on this site is to be called The Heberle Elementary School. They are handling excavation on this job with two Bucyrus-Erie Type B-2 steam shovels.

Detroit and Vicinity

BY P. M. RICHARDS

Callahan & Gross were low bidders on the Fox Creek Drain job in the village of Grosse Pointe. However, the job has been tied up by an injunction, and this may postpone the construction work until next season.



JOHNSTON BOILERS IN CHINA

Contractors for projects in all parts of the world use Johnston Boilers. We carry in stock at all times 500 or more tons of special boiler material and can make prompt delivery of this class of boilers for any desired inspection.

We maintain a library of foreign boiler rules enabling us to build to the requirements of practically any foreign government.

Whatever your boiler requirements, you will find Johnston service fast and efficient.

DEMAND THIS TRADE MARK

JOHNSTON BROS., Inc.

Specializing in Boilers for Contractors' Equipment

FERRYSBURG, MICHIGAN

In writing to Johnston Bros., Inc., please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

R. D. Baker Company of Royal Oak, Michigan, were low bidders on a large job on Lake St. Clair. This work includes the building of a sea wall.

Joe Poupore has shipped his dragline to a job near Kalamazoo, Michigan.

John Bailey's Bucyrus-Erie 1030 is working at Coloma, Michigan.

Chicago and Vicinity

Al Jonsoni, who has been working on the Mexican Irrigation Projects, is now operating for Geo. Pontarelli on a sewer job in Lombard, Illinois. Mr. Jonsoni's address there is 334 Elizabeth Street. Mr. Pontarelli has two Bucyrus 50-B's, one 30-B and a Buckeye Trench machine on the new job.

Geo. Callaghan's Sons, Inc., of Chicago, Illinois, are excavating a forty-five-hundred-foot steam tunnel for the University of Chicago. A view of this work appears above. The tunnel is twelve feet wide and is twelve to eighteen feet deep. The work is being handled by a Bucyrus-Erie 1030 clamshell which loads the material into Mack trucks.

St. Louis and Vicinity

BY H. H. BUCHANAN

Mike Costello, of Costello Bros., subcontractors for J. A. Kreis & Sons, Inc., on the Missouri Pacific Railroad work at Labadie, Missouri, is smiling these days as the Bucyrus-Erie 50-B two-yard steam shovel is ripping into their section of the work. Mike said that his little Type B Erie loaded out 28,400 yards during October. The record speaks for itself.

McNamee Bros., subcontractors under C. P. O'Reilly Construction Company, St. Louis, have been moving a lot of dirt on their Illinois Highway job near Golconda, Illinois.

S. E. Evans, Clarksville, Arkansas, is operating his Bucyrus-Erie Gas + Air shovel about thirty miles north of Van Buren, Arkansas, in the wilds of the Ozarks, a long way from a railroad siding, making a new short cut highway from Ft. Smith to Fayetteville, Arkansas. It is a rough country and an entirely new road through that section.

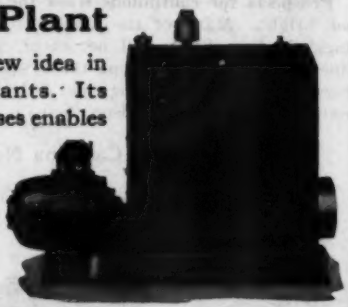
Victor J. Tobias, peer of steam shovel engineers is making his Erie Type B-195 do her stuff like a late model in the St. Louis suburbs.

Hugh R. (Hickory) Smith has just completed a large job in stripping overburden at the Fullers Earth plant of the Standard Oil Company, Olmstead, Illinois. "Hickory" at one time called his Company the Semweg Company, which

The MOON Gas-Electric Lighting Plant

AN entirely new idea in lighting plants. Its large number of uses enables it to handle your job from every angle.

Write for descriptive Bulletin No. 15.



THE MOON MFG. CO., 108-128 No. Jefferson St., CHICAGO

Wade right into it!

Your toughest digging will give way when you use the Williams "Hercules"

Time and again the "Hercules" has made good in hardpan and cemented gravel that was too stiff for other buckets to penetrate.

Sturdily built! *Guaranteed against breakage.* For complete details write for our Bucket Book.

G. H. WILLIAMS COMPANY
603 Haybarger Lane, Erie, Pa.
BRANCH OFFICES:
New York, Pittsburgh, Cleveland, Chicago

WILLIAMS
FAST-DIGGING BUCKETS

GREDAG
REG. U.S. PAT. OFF.
LUBRICANTS

contain ACHESON-GRAPHITE, an electric furnace product having a purity of 99.9%

Pure graphite resists heavy shocks, pressures, heat and cold. Moreover, it improves all metal surfaces and prolongs the life of bearings, gears, chains, wire cables, etc.

This is one of the reasons why the excavating trade prefers and demands GREDAG.

Send for Catalog, Form 869.

ACHESON GRAPHITE CORPORATION
NIAGARA FALLS, NEW YORK

Ask Your Operator

HAVE you ever watched a bucket go crashing back into the pit searching for unwary pit man? And a broken chain go lashing back over the circle reaching out for craner and operator? If you have you'll know why shovel crews recommend Taylor Mesaba Chain. *It's best by test.*

TAYLOR MESABA

"Quality at Low Cost"

S. G. TAYLOR CHAIN CO.

Established 1873 P. O. Box 117-B, HAMMOND, INDIANA

TAYLOR MADE Chain and Fittings can be obtained from your local mill supply house or hardware jobber.

Above is an illustration of a 1½-inch bar etched, showing the special piling of the iron used in Taylor-Mesaba Chain.

60
120
180
240
360
Cu. Ft.

Write for new 1929 Catalog for complete specifications.

Greater horsepower
Larger capacity compressor
Clutch — easy starting
Slow down governor
Economical operation — THE SCHRAMM PORTABLE AIR COMPRESSOR
Furnished on steel or rubber tired wheels,
Spring Trailer mounting, skidded, or fitted for
mounting on Trucks, and Tractors.

Schramm Inc., Manufacturers

West Chester, Penna.

Offices and Representatives in Principal Cities.

In writing to the advertisers on this page please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

meant "South Eastern Missouri where everything goes" and we guess that this means dirt, too.

St. Louis Items

BY A. J. KOENIG

Missouri will continue with an extensive road-building program with the approval of the voters of the State. At the election held November 6th a bond issue for $75,000,000 was carried that embraces a building program of hard roads to extend over a period of five years. This should keep the contractors busy in this part of the country.

Oscar Hinrichs, Box 3, Route No. 4, Ottawa, Illinois, has a shovel, six one-ton trucks and one 3-ton truck idle, and would like some work for them.

The Central Construction & Engineering Co., 2319 Northwestern Avenue, Chicago, Illinois, have five Fordson tractors and scrapers idle and are looking for a job to put them on.

Mautz & Oren Construction Co. of Effingham, Illinois, were awarded contract for twelve miles of hard road between Lebanon and Mascoutah, Illinois.

S. J. Groves & Sons Co. were low bidders on 4¾ miles of paving Route 69, Section 126, Lake County, Illinois, bid, $105,390.

P. J. Murphy, Moberly, Missouri, has idle a machine outfit with tractors, 12 teams and wagons. The outfit is at Littleton, Illinois. Mr. Murphy can be reached at Moberly, Mo.

Ferguson, Missouri, is planning a relief sewer and disposal plant to be constructed in the near future. The cost is estimated at approximately $150,000.

The City of St. Louis has plans for a concrete viaduct in the Southern part of the town over the River Des Peres. Cost of construction is estimated at $110,000. L. B. Bowen is city engineer.

Miller Garage & Construction Co., St. Louis, Missouri, was low bidder on Route 144, Section 101-A, Jackson County, Illinois, bid $190,597.

Pacific Coast Notes

BY J. H. SACKETT

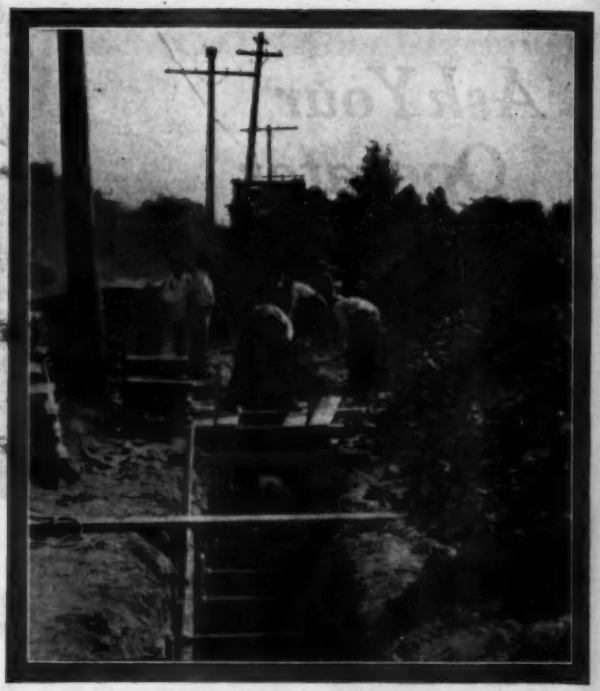
C. H. Hudson, Los Angeles, was recently awarded a contract by the Los Angeles County Flood Control for excavating Mandeville Canyon flood control channel near the city limits of Santa Monica.

J. E. Johnson, Stockton, California, was recently awarded contract for 2.9 miles of highway construction from Roseville to Rocklin, Placer County, by the California Division of Highways. J. V. Galbraith was second low bidder on the above job.

J. N. Tedford, Fallon, Nevada, has been awarded contract for 14.47 miles of grading and surfacing in White Pine County, Nevada. Mr. Tedford's contract price for this job was $74,668.00.

Chas. G. Willis & Sons, Los Angeles, received award of contract recommended by the United States Bureau of Public Roads, San Francisco, $48,140.00 for 1.85 miles of grading of Strawberry Creek-North Fork Section, San Bernardino National Forest, Riverside County.

Contract was awarded to Lang Transportation Co., Long Beach, for the construction of a 35-mile oil pipe line from Kettleman Hills to Lost Hills Plant in Kern County. The work is for the General Petroleum Corporation, Los Angeles. Materials furnished by company. Total cost of work is $300,000.



CAPACITY that PAYS

THE same great capacity, which enables Buckeye Trench Excavators to make world records under "ideal" conditions, makes good in *any* practical digging.

Chief of the many time-tested and proved working features that contribute to Buckeye's profitable performance are these: Slow-speed, heavy-duty gasoline power unit; power shifted conveyor — dumping on either side and readily clearing side obstructions; positive bucket cleaning in any soil; digging chains of heavy manganese steel; double drive to digging chains, through differential gearing; all-steel gears, cut from solid blanks and heat treated; power steering; and Alligator (crawler) traction, equipped with brakes for controlling machine when operating on steep grades.

1929 CONVENTION & ROAD SHOW A.R.E.A. JAN. 14-18 CLEVELAND, O

We will gladly give you all of the construction details that have resulted in over thirty years of success. You can see them at the 1929 American Road Show where there will be a comprehensive Buckeye exhibit.

The
Buckeye Traction Ditcher Company — Findlay, Ohio

There's a Buckeye Sales and Service Office Near You

for over thirty years **Buckeye**

Capacity Loads Any Time

THE Western Crawler Dump Wagons in the illustration were called upon to carry capacity loads often under the most adverse haulage conditions. Anytime the mud was deep these big wagons came through. On this contract of S. J. Groves & Sons, at Mackinaw, Illinois, the haul averaged 3,000 feet. There were more than a million station yards of overhaul on a 90,000-cubic-yard job. In spite of this long haul and bad conditions in the borrow pit, the Western Crawler Dump Wagons were *idle only seven working days* from May to November.

The Western 7-yard Crawler Dump Wagon makes winter work possible especially in regions where the ground does not freeze solid.

Western Crawler Dump Wagons will increase the number of days your outfit works. They will make longer hauls profitable under any conditions. They will carry capacity loads any time. Write for Bulletin 28-GK, giving complete details.

WESTERN WHEELED SCRAPER COMPANY

AURORA, ILLINOIS

WESTERN

Western

DUMP CARS AND GRADING EQUIPMENT

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Contract was awarded last month to the Utah Construction Co., San Francisco, by the Southern Pacific Company, Engineering Department, Southern Pacific Building, San Francisco, for the construction of 83½ miles of Klamath Falls-Alturas Extension California-Oregon. Work involves the following approximate quantity: 1,250,000 cubic yards excavation. Plans and specifications for above work were prepared by the Engineering Department of the Southern Pacific Company, San Francisco.

Application has been filed by the Pacific Gas & Electric Company, Pacific Gas & Electric Building, San Francisco, for the appropriation of 200 cubic feet per second from Bear River and Gold Creek in Amador County and 50,000 acre feet per annum storage water for generation of electric energy. It is proposed to use the water in a new power house to be known as the Bear River Power House, immediately below Salt Springs Dam, through the Tiger Creek power plant projected and through the existing Electra power house. Work will involve the construction of the following works: Storage Dam — On Bear River to be constant Angle arch structure, 230 feet high, 1000 feet long on top and 40 feet long on bottom, width at top 10 feet; Diversion Dam — On Gold Creek to be concrete arch type 20 feet high, 100 feet crest length and 20 feet long on bottom; Conduit — Bear River-Salt Springs Conduit to consist of 200 feet of open cut, also 12,800 lineal feet 7 x 7-foot tunnel, lined where necessary and 3900 feet riveted steel penstock, 54 to 36 inches diameter; Cold Creek Diversion — 5280 feet concrete-lined flume covered with concrete slab, 8¼ feet wide and 8¼ feet deep; Auxiliary Dam — To be 70 feet high, 1300 feet long on top, multiple arch type of reinforced concrete, which will close a saddle to the west of main dam; Power Plant — To develop 48,068 horse power, utilizing 2115-foot fall. Estimated cost of above work is $7,000,000. Work will start in or about two or three years.

Here the Track Machine is taking the place of a jack crew, raising the track on a railroad construction job.

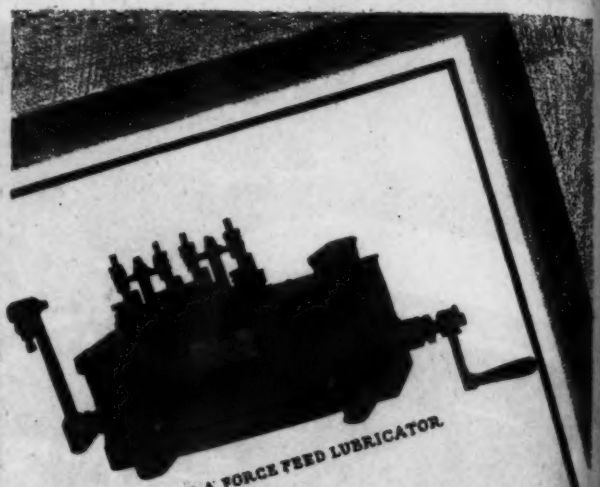
Raising Track Without Jacks

This modern labor-saving development with its various attachments is suitable for any track raising, shifting, ballasting or steel re-laying job. Wherever used it has proven to be a great saver in time and labor. Its performance will surprise you.

Write for Bulletin GR-8.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK MACHINE



CLASS B.A. FORCE FEED LUBRICATOR

BETTER LUBRICATION MEANS BETTER PERFORMANCE

A McCord force feed lubricator installed on your steam shovel now will insure more continuous operation. Dependable force feed lubrication prevents shutdowns and delays, it gives more hours on the job.

McCord force feed lubricators are used as standard equipment by the largest and best-known steam shovel builders, and they will be installed on any shovel at your request.

Put a McCord lubricator on now and be assured of dependable lubrication for the life of your shovel.

McCORD RADIATOR & MFG. CO.
Lubricator Division
DETROIT, MICH.

McCORD FORCE FEED LUBRICATORS